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ABSTRACT

The impact of curriculum change on student career preference was examined; specifically, the influence of the courses students take in geology or earth science in middle school or junior high on their career preferences was investigated. A sample of 545 high school students (average age = 16.74 years) was surveyed. A survey instrument with questions about students' eighth grade science classes was distributed in regularly scheduled high school classes. Desire to choose earth sciences as a college major was analyzed in relation to the presence of geology in the eighth grade science curriculum. Results indicated that those students who had not been in the primarily based geological class were significantly less likely to pursue a career in geological science after high school, and those who had had a fundamentally geological course curriculum were significantly more likely to choose earth science or geology as their major after high school. Rural students were less likely to choose geology than other students. The relationship of income was also examined. To meet the predicted 14% increase in job market in the next decade, suggestions about how to increase the number of students entering the field of geological sciences is discussed. The survey instrument and consent form are appended. (Author/EMK)

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Running head: CURRICULUM CHANGE AND STUDENTS' CAREER PREFERENCE

ED 427 266

The Imact Of Curriculum Change On Students' Learning And Their Career Preference[1]

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U.S. DEPARTMENT OF EDUCATION
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Abstract

This study investigated the influence the courses students take in middle school/ junior high have on their career preference. A sample of 545 high school students from southwest Ohio was studied. Research showed that without an entire course devoted to the geological sciences in high school students would be significantly unlikely to pursue a career in geological science as opposed to those who had a class in the geological sciences. To meet the predicted 14% increase in job market in the next decade, suggestions about how to increase the number of students entering the field of geological sciences is discussed.

Background and Theoretical Framework

The concept of changing a school's curriculum is not new. In the mid-20th century the major concern with curriculum change was conglomeration vs. unitary courses. The 1994 Thomas Report recommended that a social studies course be implemented in secondary schools. However, the new area of 'social studies' was still only an ambiguous subject area. The report stated it was to be a mixture of history, geography, and civics rather than a unitary subject. This report implied that each of these subjects was a 'social study' in its own right (Taylor, 1985). In 1992 Thomas Report was initiated to help develop a 'core curriculum' (Openshaw, 1992). This 'core curriculum' was a group of subjects that everyone would take in the first years of secondary school. This would eradicate differentiation, depending upon the secondary school one happened to attend, as all children would originally take the same subject options. Subject differentiation would, therefore, not occur until the junior and senior years of secondary school. Currently, social studies are divided into history, geography, and civics taught during the latter portions of the secondary level rather than one singular class.

While conglomeration vs. unitary courses is a major concern with curriculum change another area of concern which plagues this subject area is the students' ability to make good career decisions according to the curriculum they have received. The 1995 curriculum change involving the new School-to-Work Opportunities Act has helped direct more young high school students into a vocational track therefore deterring them from a college education and offering them a shorter more direct route into society (VonVillas, 1995). This curriculum change, which was designed to prepare students for

life beyond graduation, has consequently routed many students into permanent blue-collar futures where there is already an *over* abundance of applicants.

Although these studies may show the negative aspects of curriculum changes as related to learning and career preference, none of them had directly studied the relationship between curriculum change and career preference.

The primary purpose of this study was to examine the impact of curriculum change and its influence on student career preference. It was hypothesized that this impact would be significant. This study was also designed to explor the relationship between other factors, such as socioeconomic status (SES) and career preference.

Method

Subjects

The subjects for this study were 545 adolescents ranging in age from 15 to 19 years old with an average age of 16.74. They were from six southwestern Ohio high schools. These schools represented a mix of students: low, middle, and upper socioeconomic status; rural, suburban, and urban public educational institutions from grades 10 through 12. Male students represented 50.3% of the sample and female students 49.7%. Of the sample, sophomores accounted for 32.9%, juniors 24.9%, and seniors 42.2% of the total number of subjects. Approximately 96% of all subjects were Caucasian and 1.1% were Hispanic. The remaining three percent of the sample identified themselves as either Native American, Asian, or African American (the average for southwest Ohio is 94.7% Caucasian, 1.3% Hispanic, and 'other' 4%) (http://leeca8.leeca.htm). The subjects' family income levels ranged from below $20,000 to greater than $80,000; with 49.5% of the participants' family income levels between

$40,000 and $80,000, 35.6% between $20,000 and $40,000, 8.5% greater than $80,000 and 6.4% less than $20,000. The average annual income of the participants in this research ($48,170) was greater than that of southwestern Ohio's annual income of $40,000.

Materials and Procedures

The data was collected via a survey instrument given to regularly scheduled classes and developed by the authors of this research (Appendix I). The survey contained questions about the subjects' eighth grade science classes and how those courses influenced students' career preferences. The survey instrument contained 21 questions concerning three general areas: subject characteristics (i.e. age, gender, location, etc.), eighth grade base science curriculum, and subjects projected career/life choices after high school.

This questionnaire was distributed among the students in one scheduled school session. Students were informed that their participation was voluntary. They were instructed to only place their name on the student consent form if they decided to participate (Appendix II). They were also informed that their identity and the identity of their school would be kept strictly confidential. After the students had completed the questionnaire, the surveys were collected and the consent forms were removed from the surveys to conceal the identity of the subjects.

Result

The area of a subject's desire to choose geology/earth science as their major focus of study after high school was analyzed with relation to whether or not the subject had

been a part of the eighth grade science curriculum. In this instance, they either had earth science/geology as their major focus or a compilation of multiple sciences.

> The results indicated that those students who had not been in the primarily based geological class were significantly less likely to choose earth science/geology as their major focus after high school. In contrast, those who had received the fundamentally geological course curricula were significantly more likely to choose earth science/geology as their major focus (χ^2 (1) = 4.75, $p < 0.05$). This is consistent with the predictions of the study (see Table 1 and Figure 1).

(Insert Table 1 and Figure 1 at about here)

The areas of the subjects' homes (demographic locations) were explored in relation to their desire to choose earth science/geology as their major focus of study after high school. The results suggested that rural students were apt to choose the geological sciences as their major only half as much as urban and suburban students (Figure 2). This difference is statistically significant (χ^2 (1) = 3.87, $p < 0.05$).

(Insert Figure 2 at about here)

The relationship between family taxable income and subjects' desire to choose science as their major focus after high school was also explored. Of those participants whose family taxable income was greater than $80,000, 59.3% would choose sciences. Of those who chose science, 27.7% had family taxable incomes between $40,000 and

$80,000, 36.6% between $20,000 and $40,000. 10.3% had incomes of less than $20,000. This difference is also statistically significant (χ^2 (3) = 9.36 , $p < 0.05$; see Figure 3). The results indicated an overall positive association between income and the likelihood of choosing science as the participants' major focus of study after high school.

This indicated that the higher the families' taxable income, the more likely the students' selection of science as their major. Similar pattern of relationship was found between a family taxable income and subjects' likeliness to select science as their major focus after high school also. However, this relationship was not statistically significant.

(Insert Figure 3 at about here)

Discussion

To meet public concerns about the environment, the field of geology/earth science is expanding rapidly (Horn, 1993). As of 1990, geologists held about 48,000 jobs in the United States, and this number is expected to increase, by 14%, to approximately 55,000 jobs within the next decade. Yet, the supply of applicants to fulfill these demands is lacking (Kleiman, 1993).

Since there is a need for more geology/earth science majors in society today as well as in the future, possible solutions should be explored to increase the number of students entering the geological sciences. The researcher, based on the current school situation, considered three possible solutions. The first solution is to reimplement the original eighth grade science curriculum in geological sciences. If the reimplementation occurred, students would receive enough classroom geology training as indicated by this

research to significantly increase the number of students entering the geological field. On the other hand, students would receive only one year of compilation sciences (in seventh grade) before entering high school. This would force students into a curriculum where the sciences are concentrated in earth science but less involved with the mandatory areas of chemistry, physics, and biology. The second solution is to implement a course in the ninth grade after students have already received two consecutive years of compilation sciences. According to present research, the implementation of a mandatory earth science class in the ninth grade would fulfill the hours needed in the geological sciences for there to be a significant influence on major. This would occur only after the students had received two years of compilation sciences before going into the high school level. The third solution would be to create an elective course in high school for the students who wish to pursue geology/earth science further. By creating an elective course, not every student would receive classroom coursework in geology and a significant influence could be made. Currently, some high schools have one elective course in earth science/geology; however, the demand for geology majors is still not being fulfilled. Therefore, in comparing the above three solutions, the second solution is preferred.

Conclusion

Receiving a course in the geological sciences in the junior high/middle school could significantly increase the possibility of students entering this field after high school. Since there is a significant need for students entering this field after high school, it is suggested that a course whose primary focus is in the geological sciences should be given in high school. Receiving classroom hours in the field of geology will better prepare students for the demand of geology/earth science majors after high school. This

course should come after students have received two consecutive years of compilation sciences.

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Table 1

Had Geology/Earth Science as a course in eighth grade and choose geology as major focus of study

	Had Geology/ Earth Science		Did Not Have Geology/Earth Science	
Choose Geology	34	(8.1%)	405	(91.1%)
Do Not Choose Geology	2	(2.0%)	104	(98.0%)

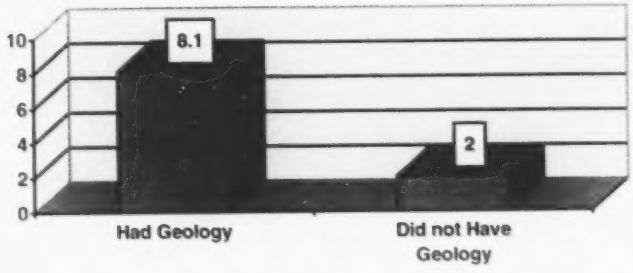

Figure 1: The percent of students who would choose geology/earth science as major focus of study.

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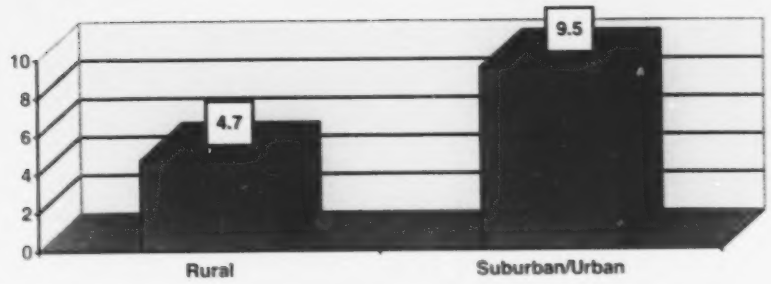

Figure 2: Percent of students who would choose geology/earth science as major focus of study and their demographic location.

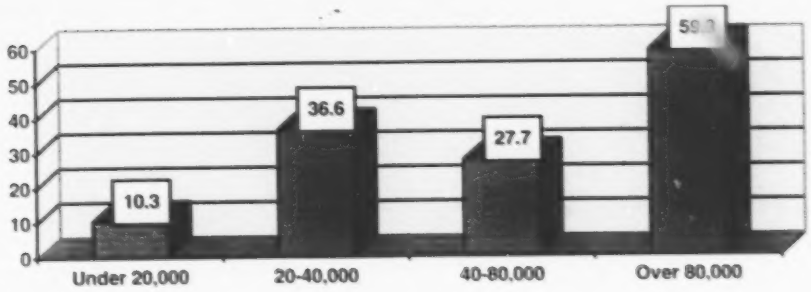

Figure 3: Families taxable income and the percentage of subjects planning to choose science as their major focus after high school.

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Appendix I

Miami University
Oxford, OH
Michael A. Eckert- USS

SURVEY INSTRUMENT

The Impact on the Curriculum Change on Students' Learning and Their Career Preference

Age _____

Grade: 9 10 11 12

Sex: M F

Race: Caucasian
Hispanic
African - American
Asian
Native American
Other _____

Living Environment: Rural Suburban Urban

Families Economic Status: < $20,000 $20,000 - $40,000 $40,000 - $80,000 > $80,000

What did your eighth grade science curriculum consist of? Check all that apply:

	Coarse A	Coarse B	Coarse C
Biology	_____	_____	_____
Botany	_____	_____	_____
Geology / Earth Science	_____	_____	_____
Micro-biology	_____	_____	_____
Chemistry	_____	_____	_____
Physics	_____	_____	_____
Physiology	_____	_____	_____
Sociology	_____	_____	_____
Other_____	_____	_____	_____
Grade in class	_____	_____	_____

Have you ever been in a science class where the main focus of the class was earth science / geology (i.e. an assortment of astronomy, volcanoes, earthquakes, weathering / erosion, oceanography, groundwater, etc.)?

Yes No

If so, what was your grade in the above mentioned class: A B C D F N/A

Do you plan on continuing your education after high school?

Yes No

If so, in which ways? Circle all that apply.

College / University

Trade school

Military

Other_____

Would you choose or have you chosen science as your major focus of study after high school?

Yes No

If so, would earth science / geology be you focus of study? If so why?

_____

_____

_____

_____

If you will or have chosen a particular science as your choice of a major and is not earth science / geology, what is it and why would / did you choose it?

_____

_____

_____

Appendix II

Miami University
Oxford, OH
May X, 1997

College of Education
Michael A. Eckert- USS

STUDENT/PARENTAL INFORMED CONSENT FORM

The Impact of Curriculum Change on Students' Learning and Their Career Preference

You are invited to participate in this research study, the following information is provided in order to help you to make an informed decision whether or not to participate. If you have any questions please do not hesitate to ask.

You are eligible to participate in this study because you are currently an Ohio high school student that has taken an eighth grade science class previously.

The purpose of this study is to investigate how curriculum change influences students' learning and their career preference.

You will be asked to complete a survey which will take about X minutes. There is no known risks associated with this research, it is a simple questionnaire for the sole basis of collecting data.

Any information obtained during this study which could identify you will be kept strictly confidential. The information obtained in this study may be published in a scientific journal or presented at a scientific meeting, but your identity will be kept strictly confidential.

Your rights as a research subject have been explained to you . If you have any additional questions concerning your rights, you may ask any questions now. You are free to decide not to participate in this study without adversely affecting the relationship with the investigator or Miami University.

YOU ARE VOLUNTARILY MAKING A DECISION WHETHER OR NOT TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE CERTIFIES THAT YOU HAVE DECIDED TO PARTICIPATE AND HAVE READ AND UNDERSTOOD THE INFORMATION PRESENTED TO YOU. YOU WILL BE GIVEN A COPY OF THIS CONSENT FORM TO KEEP.

Signature of Parent/Guardian	Signature of Subject	Date

IN MY JUDGMENT YOU ARE KNOWINGLY AND VOLUNTARILY GIVING INFORMED CONSENT TO PARTICIPATE IN THIS STUDY.

Signature of Investigator	Date

IDENTIFICATION OF INVESTIGATOR

Primary Investigator

Michael A. Eckert, Office: 524-1185